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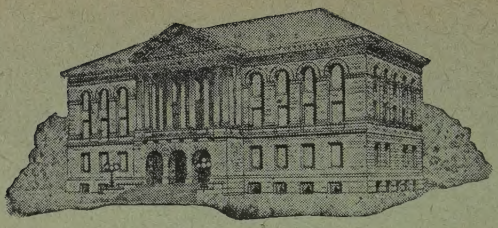

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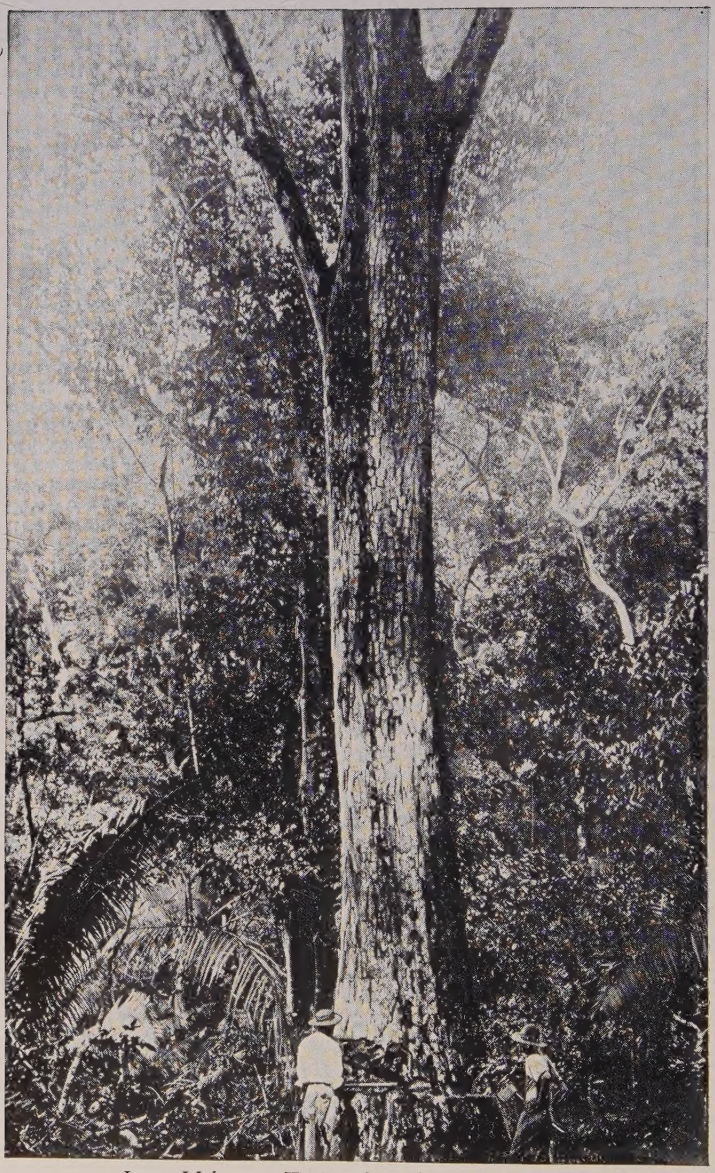


Large Mahogany Tree in Central American Jungle.

The Romance of Mahogany

George N. Lamb

Most people in the United States have seen mahogany in its finished form both in museums and homes throughout the land. The chances are very great, however, that not a reader of *The Chicago Naturalist* ever has seen a standing mahogany tree. These trees, for the most part, go through their long life cycle far from the haunts of civilized man and far from the beaten paths of the traveler in tropical countries.

The mahogany tree has been classified by botanists as belonging to the order Meliales, family Meliaceae, sub-family or tribe Swientenioideae, genera *Swietenia* and *Khaya* and included in these genera are several species.

Although the mahogany tree has been known to Europeans since shortly after the discovery of America, or about 1500, it was not botanically classified until 1760 when it was named *Swietenia* by Nicholas Joseph Jacquin of Leyden, in honor of Baron Geraard Von Swieten, botanist and physician of Leyden. At that time the mahogany trees of the mainland of Central America and the West Indies were classified as a single species and designated *Swietenia mahagoni* by Linné, the founder of modern botany, in 1762.

In 1886 the principal mainland mahogany was described *Swietenia macrophylla* by King from specimens originally from Honduras.

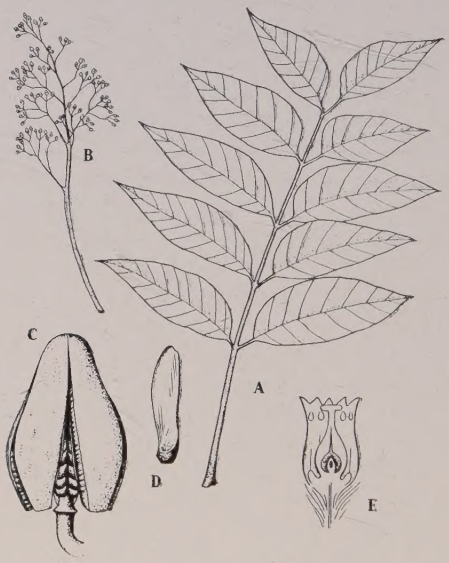
Long after mahogany had been discovered in America, mahogany was also found on the West Coast of Africa. It was first botanically classified in 1789 by Desrousseaux as *Swietenia senegalensis.* In 1830 Jussieu differentiated geographically between the American species of *Swietenia* and the African species of *Swietenia,* and proposed that the original name *Swietenia senegalensis* be changed to *Khaya senegalensis.* Eventually, several species of the genus *Khaya* (the *Swietenia* of Desrousseaux) were recognized but the most plentiful is *Khaya ivorensis.*

Mahogany grows only in the tropics. It has been planted and grows wild in southern Florida but never north of the farthest south for old Jack Frost. It occurs in the islands of the West Indies and from southern Mexico to northern Colombia and Venezuela. It shows up again on the Upper Amazon and its tributaries in western Brazil, Peru and Bolivia. It also is found on the West Coast of Africa, on the Ivory and Gold Coasts and in Nigeria. Strangely enough it is not found in Tropical Asia nor in the islands of the Pacific.

The mature mahogany is a stately tree, raising its head far above the leafy canopy of the surrounding jungle. Mahogany is strictly isolationist in its habits. There are no mahogany forests. There are no stands of mahogany in any country where it grows. Usually each tree is isolated.

Occasionally several trees may be grouped within sight of each other but this is exceptional. The explorer is happy to find an area which will average two merchantable trees per acre.

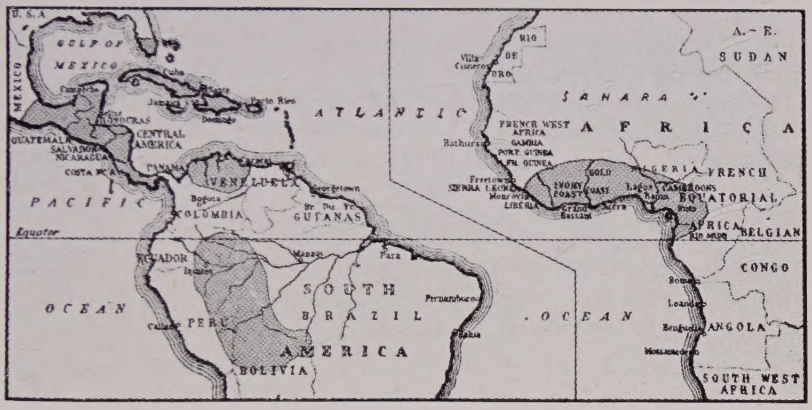
Only a few years ago the mahogany explorer hacked his way through the jungle with Indian guides and located mahogany trees the hard way. At high noon it was almost necessary to bump into a mahogany tree to see it. Even then it took a lusty blow with a machete into a spreading buttress to determine for sure that it was mahogany.



Tropical American Mahogany
(Swietenia macrophylla King)

A. Leaf (compound with leaflets like an ash tree). B. Flower cluster (few survive, grow into large pod with many seeds). C. Fruit (a pod larger than an egg that splits open, liberating many seeds). D. Seed (flattened with wing mostly at one end). E. Flower (in cross section).

Today it is easier. In March the hunter sails over the jungle in an airplane and spots the mahogany trees from above. Curiously enough the mahogany leaves turn a rich mahogany color at that time. This makes it possible to spot and count the trees from the air. The job isn't easy because also at that time there may be other trees budding or with fading flowers that have much the same appearance. The experienced cruiser soon learns the difference. However, he must do more than this. He must locate streams and water sheds. He must pick areas where all the logs will come out down hill. Too often trees that are "on the other side of the hill" might just as well be on another continent as far as a particular logging operation is concerned.



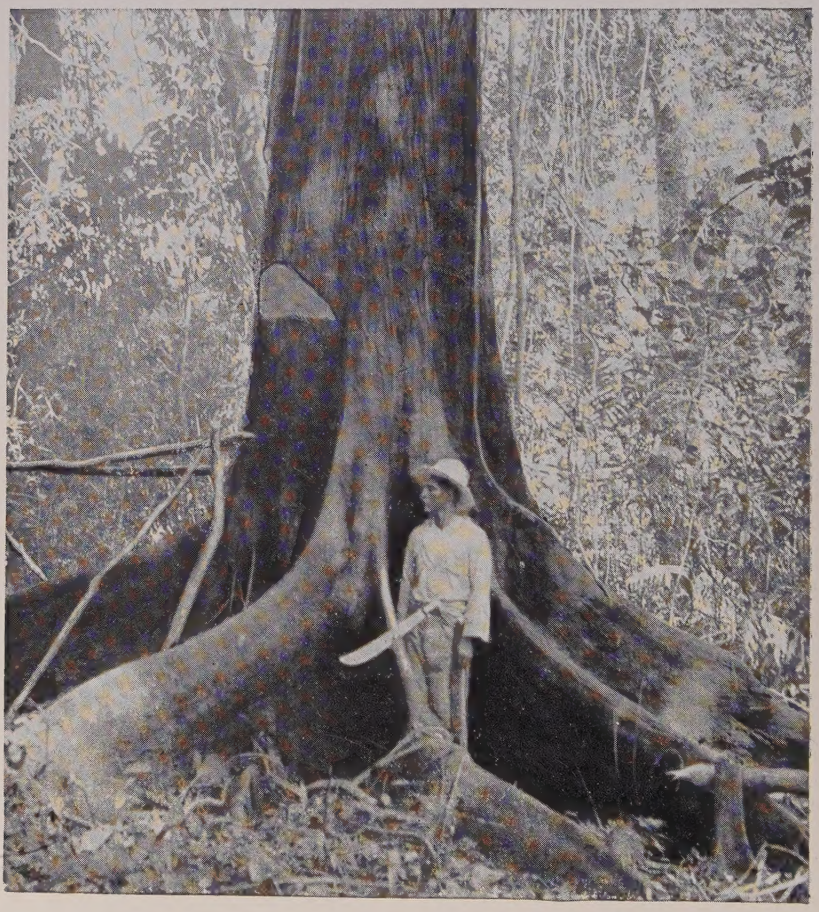
Map Showing Areas Where Mahogany is Grown.

Why are there so few mahogany trees in the steaming jungle? It's all a matter of chance. The story of each always is different but always a struggle for survival. Let us imagine a typical example. Let us say that there is a towering giant of a tree—old and decrepit. A tropical storm bursts in all its fury. A gnarled limb is wrenched from its trunk and crashes to the ground smashing the underbrush and plowing up the deep forest soil. The seed pods of a mahogany tree are open and the winged seeds are ripe. The same storm bears one seed a block or a mile from the parent tree and it falls on freshly gouged earth. Perhaps a darting deer, fleeing a jaguar, steps on the seed and presses it firmly into the ground. The mahogany seed, perhaps one of thousands, is planted. Seeds of other trees lie about but may fall in barren places or be picked up by birds or animals. Our one mahogany seed germinates and starts its climb for light and air. Quick-growing weeds almost smother it. Underbrush springs up and the mahogany seedling battles for its life. Other trees have started on the exposed soil. The young trees battle and overcome the brush. Later they battle each other for a chance to toss their leaves to the sun. Insects ruin one, a brousing tapir breaks another, burrowing forest denizens uproot another and the mahogany tree outgrows the rest.

At last it pushes its leafy top above the surrounding jungle. It is tall, spindling and without side branches. The rest is easy. More branches; more leaves; the long slender trunk grows thicker and it grows twelve months a year. There are no side branches to make knots or other defects. At last the widely buttressed tree is 150 feet high, ninety feet to the first limb, and is almost a cylinder six feet in diameter. The survival of the fittest.

The mahogany tree may survive infancy and youth and still not reach maturity. There is an infamous parasite in the jungle, known as the

"strangler fig." A seed of this strangler may lodge in a harmless orchid growing on the trunk of a mahogany tree. It germinates and sends down to earth a tiny tendril that looks for all the world like a piece of wrapping twine. It takes root and starts to grow. Before long it is a lusty vine running straight up the trunk of the tree. Soon it sends out lateral arms here and there like the embracing arms of a bear. It grows



Large Central American Mahogany Tree Showing Buttressed Roots.

upward and sends up its own branches to mingle with those of its victim. Finally the host tree is incased in a shell of the strangler and its branches and large leaves shut off the mahogany from the sunlight. Externally, the mahogany tree has been transformed into a strangler fig.

The strangler does not always win. Sometimes the host tree, in its

growth, splits the fig asunder and finally wins the battle for existence. When such a tree comes to market the scars of its battle often result in strangely figured and beautiful mahogany.

The mature mahogany does not stand smooth and clean like a pine tree in the New England hills. It is a host to many harmless plants, such as ferns, orchids and moss. The mahogany tree has two great enemies in its old age—the hurricane and *comejen,* a wood-boring insect. They work together. The *comejen* works from the ground and up the center of the tree. Little by little they destroy the wood at the base until at last the tree may go down before a brisk wind.

Mahogany Logs Stored on Bank of Small Stream Awaiting Flood Time.

And now more about mahogany logging. After an area has been found that is suitable, roads and trails are built from a stream bank to the main body of timber. Some years ago the hauling was done with oxen and a haul of six or seven miles was considered long. Today hauls as long as forty miles are made with huge tractors and trucks.

This can be done only in the dry season usually from February to May. Hauling goes on night and day in a mad race against time. Occasional rains make the so-called roads impassible. Equipment breaks down.

Often a vital spare part must be flown from the United States in spite of every precaution. When the rains come, the hauling stops. Any logs unhauled stay in the jungle another year. Sometimes the rains break with tropical fury. If they do, a stream may rise thirty feet in twenty-four hours and the logs go out in a hurry. In some seasons the rains are intermittent and it may be weeks before the streams have enough water to float the logs. Occasionally floods recede rapidly with the result that many logs are stranded until the following season.

Too much rain is as bad as too little. If the floods are severe, a stream may overflow its banks carrying logs into the jungle where they can be neither found nor salvaged. Another hazard always is present in rivers that are deep and swift. On such rivers, booms, sometimes triple booms, are placed across the river above its mouth to catch the logs. Sometimes these booms will be broken by the tremendous pressure. When this happens a whole season's cut may be washed out into the ocean. These logs are mostly lost and partial salvage is possible only at great expense.

Even when mahogany logs are safely rafted at seaboard the shippers' troubles are not over. Many logs are collected in shallow lagoons along the coast that fill with fresh water from the floods. This is safe storage until a storm drives sea water into the lagoon mixing with the fresh water and making it "brackish." When this happens, a marine borer known as the teredo starts to work and may completely riddle the huge mahogany logs within a few weeks.

Loading mahogany logs on ships is a problem at the mouth of many rivers. Ships cannot enter due to shallow sand-bars across the mouth. In such places, rafts must be towed out to the ships in the open ocean. This can be done only when the sea is calm. If a blow starts, a pounding surf scatters the logs and endangers the small towboats.

It always is a battle to get mahogany logs loaded before the hurricane season in the fall months. If this is not done, the logs may have to wait until spring because owners will not risk their ships in dangerous waters at that season.

Incidentally, mahogany logs are not considered desirable cargo. Weighing up to ten tons each, they may break tackle and smash and bend steel plates as the ships roll in the open sea. Once the logs are loaded, troubles are mostly over.

The logs are unloaded in quiet waters in this country and await their turn to be converted into lumber and veneer that go into the finest of cabinet-making in the United States. Mahogany is widely used in furniture, for radio cabinets, interior woodwork and paneling, boat building, aircraft, models and patterns, pianos and clocks.

The following are examples of the endless variety of mahogany figures that make mahogany one of the world's most beautiful and distinctive cabinet woods.

Swirl

Fiddle

Stripe

Broken Stripe

Mottle

Crotch

Samples of the Variety in Mahogany.

How the Forest Encroached Upon the Prairies of Illinois

Amos Sawyer
Hazelwood Farm, near Hillsboro, March, 1875

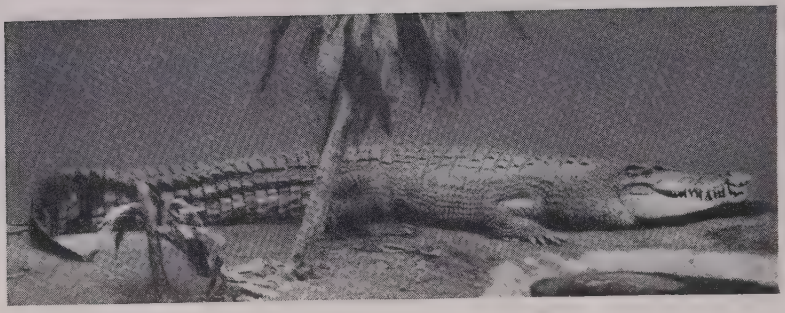
Note: *This paper, read before the Academy in March, 1876, and apparently never published, was recently discovered in the archives of the museum. It has been referred to Dr. George D. Fuller, Professor Emeritus of the University of Chicago, and he recommends that it be published. Inasmuch as no more satisfactory explanations of how the forest encroached on the prairie seem to have been advanced in the meantime, and as the subject holds much of interest now, even as it did 70 years ago, we offer it to the readers of the Naturalist with no apology.*—Ed.

Among the wonders and mysteries of nature by which we are surrounded, the cardinal one of interest to the inhabitants of central Illinois, is the arboral change which has taken place during the last 50 years under the protecting influence of civilized men.

As the few remaining pioneers of the "Prairie State" look back over a period of sixty years, it seems magical to them, impossible to the present generation, that the former line of the prairie should now be the commencement of a dense growth of oak forest, extending for miles into what were the grassy plains of earlier days. It suggests the question so frequently asked by the early immigrant—"How do you account for the presence of these trees in the soil, so evenly and quickly distributed over a large portion of the prairie after they were protected from the prairie fires?" Opinion is pretty evenly divided between two theories: first, that the seed was already in the soil and only awaited the first favorable opportunity to germinate; and second, that the young oaks grew among the grass but never attained sufficient size to attract attention as they were smothered by the grass during the spring and summer, and in the fall the season's growth was destroyed by fire. The objections I would urge against these explanations are: first, acorns are perishable and would not retain their vitality long in our soil and climate, second, after repeated examinations I failed to discover any young trees in the sod, or indications that there ever had been. It appears to me that this rapid spread of the forest is due to the hazel as it was always found, as at present, on the border of the prairies, and when protected from the annual prairie fires grew fast, spread rapidly, the seedlings growing so close together that they completely smothered the prairie grass, and prepared the soil to receive the acorns of the pin-oak, scattered by the wind, or dropped by the birds and mammals. These in turn grew to shade and exterminate their predecessors; now they are yielding to other more hardy and valuable species. It is not unlike the settlement of the west—the hunters

and trappers (hazels) follow the Indians (prairie grass); the half hunter and farmer (pin-oaks) keep close to the former; while the true agriculturist or most valuable occupant of the soil (elms, white oaks, cherry, etc.) crowd the latter out as they move in; the presence of the one is fatal to and will exterminate the other. Therefore, as a certain preparation of the soil, as well as the extermination of the prairie grass, was necessary ere forest trees could grow, the hazel seems to have been designed for, and to have performed, this office perfectly. Of late years the advance of the forest has been in a great measure checked by the fact that the acorns and nuts are mostly consumed by domestic animals as quick as they fall; but the fence-rows give evidence that the birds are yet at work, for in almost every fence corner there can be seen young cherry, elm, cottonwood, and ash, with an occasional oak tree, (planted, probably, by some ground or wood mouse) rearing their young tops toward heaven's blue dome, and bidding defiance to the fierce windstorms of summer, as well as the cold, rude blasts of winter, and by their rapid growth proving that the prairies are adapted to growing forest trees, when the soil is properly prepared to receive them.

That the isolated hazel patches of the prairie owe their origin to the striped or prairie squirrel I think there can be no doubt, for the nut of this shrub was the favorite food of this species of squirrel, and I have frequently found where they have dropped one in their journey from their feeding ground to their burrows in the prairie. Some of these nuts no doubt became covered with soil, either by the action of the frost, or pressed under by the hoof of some animal, grew and formed the nucleus for a "hazel-rough." The mystery of the origin of the isolated, little oak groves of three or four trees so frequently seen in the middle of the prairies could, of course, be explained in the same way, though I never remember to have seen acorns among the stores of the ground squirrels, and I am inclined to think that they owe their origin to another cause —that is, until the last few years, the wild pigeons chose this route in their journey from north to south and back. During their spring passage they would stop to rest and for food, and during this flight many were stricken down by prairie hawks, and the acorns contained in their crops were scattered wherever they were eaten, which occasionally might be in a patch of hazels. In this event the young trees would be protected from fire and soon make themselves seen. I have no doubt but the little clusters of white oaks and sassafras, so frequently met with in the young black oak timber, originated in this way. It would seem in fact that the increase and variety of our forests is, in a great measure, due to the agency of birds and mammals. Since the extermination of the prairie squirrel, we never see little hazel patches springing up here and there on the prairie, as if by magic; apparently their career and usefulness ended at the same time.



Crocodiles in Borneo

Harry C. Raven*

The natives of Borneo fear crocodiles more than they fear any other animal. Dozens of people are killed and eaten there yearly by these animals. A friend of mine who has had a sawmill on the Mahakkam River for more than thirty years advised me to be careful, when boarding or leaving my schooner, in clambering over the logs, tied by rattans, floating in the river just before his mill. "One can never be sure that there are no crocodiles about," he said, and went on to say, as we stood there looking at the river, that during one year five Malays had been taken by crocodiles from that very spot. He told me that of all the natives he had known to be caught by crocodiles only one had escaped. This happened several years before, shortly after five o'clock in the afternoon, after his natives had left the mill for the day. He was alone, having just closed his little office, and had started toward his house, which stood facing the river about sixty yards away, when a Malay came to him to ask if he could buy one of his logs that were floating there before his mill. He told him to take the log, and he himself went on slowly toward the house. As he stood on the porch, he heard someone call, "Tolong, Tuan!" (Help, Mister!). He turned around, walked to the edge of the verandah, looked and listened. Everything was quiet. For the moment he had forgotten the Malay to whom he had been speaking a few minutes before. He turned to go into the house when the call came again, this time repeated several times. There in the river beyond the logs was the Malay, a crocodile holding him by one arm. In another instant the man had disappeared for the reptile did not keep his victim on the surface for more than a minute or two at a time before dragging him down.

*A distinguished American naturalist and anatomist, the late Harry C. Raven spent six years in the East Indies in museum collecting, giving him an extraordinary insight into the animals of the Oriental Tropics.

Photo by courtesy of the Philadelphia Zoölogical Garden.

My friend shouted to his servants to get help and within a very few minutes natives had arrived in canoes, armed with spears and poles and short sword-like knives, but not before the man had reappeared and disappeared several times. When the men in the canoes got quite close to where the crocodile was, it brought its victim to the surface again, this time thrashing its head from side to side and tearing the flesh of the poor man's arm to shreds. Disturbed by the arrival of the men, and stabbed with a spear or two, the crocodile released his hold and disappeared under water. Thus the man was rescued. The terrible lacerations on his arm, though treated with only the simple remedies which the Malays have, healed in a comparatively short time.

This man told afterward how he had been caught by the arm and jerked off the log on which he was squatting. When under water his free hand came in contact with the tip of the reptile's head, and the thought of poking his thumb into its eye occurred to him. He did so, thus causing the animal to squirm, and in a few moments to rise to the surface. Here the man could breathe and call for help. The crocodile, however, did not stay on the surface for long; he simply snapped viciously several times, in trying to get a better hold on his victim, and then dived. The Malay poked his assailant in the eyes each time they went down. It was undoubtedly this procedure which kept him from being drowned.

One would think that after experiences of this kind the people would be afraid to go near water, yet within a hundred and fifty yards of the place where this incident had occurred, I watched Malay boys and small children swimming, and jumping off a bridge into the river. This was their habit nearly every afternoon. I asked them if they were not afraid of crocodiles; they admitted they were but said the crocodiles did not come just here except at night, and of course they would not swim at night or late in the afternoon. After a time I, too, developed their attitude, following the example of the natives who were my companions. In visiting a place, new to us, we would ask before bathing in the river, "Are there no crocodiles here? Do you bathe here, in the river?" and the answer would frequently be, "Yes, we bathe here, the crocodiles stay on the other side of the river." This, in many cases, much to my surprise, was perfectly true. The crocodiles seemed to know human beings were dangerous during the day and did not attempt to molest them.

Far up the Manakkam, I visited a little village of Kutinese Malays who had had a ghastly experience with a crocodile. I arrived at this place after dark and as soon as our boat was alongside of the log raft, which constituted the landing place, I jumped out and found there was an ironwood cage in which to bathe. The inhabitants soon came down to see us and I asked an old man if there were crocodiles about. He said no, that though they bathed in the cage, it really was no longer necessary, for they had killed the bad crocodile just a few weeks before. That

evening in the chief's house, while I squatted on a rattan mat spread over a floor made of heavy stems of the sago palm, and as smoke rose through the floor, filling the house and making our eyes smart but keeping away the mosquitoes, I listened to the story of the crocodile which had haunted the neighborhood for more than three months.

"Yes," said the old chief, "it is now more than four months since the first of my people was caught. The first to go was a boy about twelve years old, the eldest child of a relative who lived here in the next house. The boy went down to get some water late one afternoon, and as he was dipping it up one of the neighbors saw an enormous crocodile drag him down. There was no great splash, there was no sound. It was just the merest chance that anyone saw what had happened. The witness gave the alarm, shouting to some of the people in the village and calling others from the ricefields by means of signals on the gong which is here beside me now. What could we do? Men in canoes paddled up and down the river, ready to spear the crocodile if they could see it, but no trace could be found.

"Less than a week after our first loss, a woman was bathing at the lower end of the village during the middle part of the day when the sun was high. She too was taken, and by that same crocodile. There could be no doubt its being the same, for it was huge, its head alone more than a fathom long. We then made ironwood cages in which to bathe and no one would go on the rafts alone, or when the light was not good. Men would stand guard on the rafts while the women bathed or dipped up water . Nevertheless in another few days the little brother of the boy first taken was eaten by that animal. No one actually saw him dragged down, but it could not have been otherwise. His mother, who was pounding rice, did not see him playing with the other children, so called for him, then searched frantically. There was no use of searching. He had probably gone to the river to get something from his father's canoe, or to get a drink, and now he too was gone."

In this village there were about three hundred people, and like most of the villages along the river this one stretched out for nearly half a mile. All the houses were built facing the water and were set back but a few yards from it.

"Nearly everyone has his own bathing place," continued the old man, "and it was impossible to guard them all. First a boy was taken from this end of the village, then a woman from the other end, then two more from this end. We built stockades in the water, we made all sorts of noises, but nothing we did would make that crocodile go away. It was seen many times, and if there had been a gun in the district we might have shot it. At the end of three months ten of our people had been eaten by that terrible beast. In the morning you will see how the grass has already grown up about the house of my relatives. Yes, it was first

the two boys who were taken and later the parents; the mother of the boys was the last of the ten people who were eaten. Now their house stands empty,—they are all gone.

"Many times we tried to catch the devil that haunted our village. Several times it took the dogs we used for bait, but did not get caught. Finally we tied a fathom of fibrous bast to the middle of a double-pointed, foot-long ironwood spike, the other end of the fibrous bast being fastened to heavy twisted rattans, and at the end of fifty feet of rattan was a piece of wood four or five inches in diameter and nearly a fathom long. Crocodiles seldom eat their victims just where they are captured. Usually a crocodile holds its prey under water until it is drowned, then takes it away to some quiet pool or eddy where it can be torn to pieces at leisure. We fastened the ironwood spike securely to a dog, which we tied out on one of the rafts in front of the village. The purpose of all this was to try to induce the crocodile to swallow the spike along with the dog. If the spike was fastened to the dog and to the rattan by any hard or stiff material such as finer rattans, or cordage of other sorts, the crocodile would simply thrash the animal about until it was free of both the fastening and the spike. This fibrous bast, however, is soft, wonderfully strong, and besides, when the crocodile's teeth penetrate it they do not cut it, for the fibers yield and separate as cloth does when a needle is pushed into it. The dog, then, was tied out on the raft, well fastened to the spike and the rattan with the buoy at the end was put in the grass near the shore. The dog howled and in a short time the big crocodile had come and dragged him down to a watery grave. The next day the men from the village went out to search for the telltale buoy. It was found in a quiet place near the bank of the river. By pulling on the rattan we could tell the crocodile was at the other end. The terrible beast had swallowed the sharpened spike, which, when pulled must certainly turn crossways, penetrate the tissues of its body and get caught on the bones of its neck or jaws. The news soon reached the village, and from this village was spread to the houses of the people who have clearings inland, so that soon hundreds of people had gathered. The order had been given not to molest the animal until many people were there, for it was certain it would take a great number to hold such a brute. We decided to make the first pull on the rattan a sudden one so that the spike would become securely lodged in the crocodile's throat and not quietly disgorged. This we did and the result was immediately apparent. The animal began to struggle in the water and pulled and thrashed and squirmed. It was finally dragged to the bank, which fortunately was sloping, not vertical as it is in many places. No sooner was the crocodile at the surface than the people began throwing spears and sharpened poles at it. Many penetrated, but many more glanced off its huge body. Its jaws beat together with a noise like that made by slapping two flat stones together. A ter-

rific noise was also made by its tail which splashed mud and water for fathoms in all directions. Its struggles were useless, however, for the spike was firmly lodged in its throat and the animal was finally pulled right up on the bank. There its tail was cut off and this prevented further thrashing about. When we cut it up we found in its stomach, besides its most recent meal, the short black, white, and yellow dog hair, as well as numerous curved claws. Besides these there were some brass anklets, two or three finger rings and some stones."

I was shown two or three of the teeth of this crocodile and was told that these were by no means the largest teeth. Nevertheless, they were of such size I doubted very much if there were really any larger ones. However, the natives said the Kepala District or District Chief, who lived at a village about a day's journey down the river had the skull of the crocodile, which I would be able to see, if I cared to stop there on my way to the coast. I did stop, and saw the huge skull, which reminded me of the skull of some great extinct reptile of bygone ages. Every tooth had been removed, but the sockets of the largest ones, with a diameter about equal to that of a hen's egg, afforded evidence by which one could judge the size of the teeth they had enclosed. The natives up stream were right,—the teeth from those large sockets were certainly larger than the ones they had shown me.

In spite of the fear that crocodiles instill into the human beings and other animals that inhabit the same country, a true lover of nature who may have an opportunity to observe them in their native haunts, cannot fail to admire these reptiles for their graceful lines, beautiful color pattern, and variety of somber hues. They match their surroundings so perfectly that they are frequently passed by unnoticed whether they are lying in the sunshine, on a mud and debris-covered river bank, or in the shadow of the clean tropical rain forest.

Test Your Nature Lore

True or False?

1. Birds are the only group of animals which migrate annually.
2. The sulphur-bottom whale is the largest animal that ever existed on earth.
3. The term seventeen-year locust is a misnomer.
4. Queen honeybees can only sting once.
5. There are more different kinds of insects than all other living things on earth combined.

Answers on page 24.

Unusual Nesting Sites

E. R. Ford*

Of many species of animals it has been observed that habits which, when first practiced, appeared abnormal, became later merely unusual and, at length, quite common. Examples are found among swallows, wrens, woodpeckers, storks, owls and other birds which, for nesting purposes, accept the niches provided by the various cultures of man. It may be supposed that it was not long after the erection of buildings with flat, gravelled roofs that some pioneer among nighthawks chose such a site for nesting, and that chimneys in the wilderness were not long disregarded by swifts and even golden-eyes. And it is likely that such phenomena were judged by observers as the unaccountable vagaries of the birds involved. But these artificial niches, in their essentials for the purpose of shelter and nest support, were like those provided by the wild.

Once the writer found a chipping sparrow's nest in a small bush growing in the bank of a drainage ditch. Thus its elevation was at the level of the surrounding area. In effect its situation was but little different from that of two other nests of this species which later were found built on the ground in a growth of cinquefoil. Similarly an indigo bunting's nest was placed ten feet up in a sapling growing in a ravine. In effect the tree-top was part of the lesser growth of the hillside. A dickcissel's nest, normally placed on the ground, or a foot or two up in a bush, was found by the writer at a height of fifteen feet in a tree. Such unusual situations are, in different degree, but modifications of the normal; but from them, conceivably, a new habit might evolve.

The middle-aged will remember the fright shown by horses driven on country roads in the early days of the automobile. Some of these animals never became accustomed to the new monster, but succeeding generations have been conditioned to a universal tolerance. Doubtless, in the same way, many species of wayside-nesting birds have come to possess an informed, inherited or instinctive (as one may choose to name it) indifference to motor traffic.

There have been published accounts of nesting wherein the abnormal may be explained by exigency. A flicker, in a treeless region, nested on the ground. A bald eagle in Michigan, whose ancestral pine had fallen, repaired to a stout but not lofty white oak and, in this most suitable tree in that cut-over area, built its eyrie at a height of but fifteen feet. Another eagle in the same region built its nest and raised its young, under warden surveillance, without benefit of tree or bush. Even such exigent nestings, while not of the same kind as modified or adaptive nidification,

*Honorary Curator of Ornithology, The Chicago Academy of Sciences.

might originate, perhaps, new patterns in the life history of flicker and of eagle.

These reflections, common to students of animal behavior, proceed from the recent observations of the strange nestings of a song sparrow. This species often breeds about houses, in ornamental evergreen and other plantings and in the vines of porch and arbor. But *this* original placed its nest six feet up in a flower-box fixed to the bole of a tree. The box, 10 X 14 inches in area, held Sedum and petunias, in watering which the gardener found the nest. It was empty at the time and my neighbor, thinking it had served its purpose, removed it. She continued to water her plants, just above eye-level, until, one day, a bird flew out and she found a clutch of eggs in the damp cavity from which the nest had been taken. Later, when the writer visited the box, he found one nestling about four days old, lying in the cold, uninsulated hollow.

Here is a case not only of an adaptive nesting niche, with cover and elevation as in a bush, but also of an exigent and abnormal use of the niche. Haply a descendant of the surviving sparrow may one day have its nest described as "a mere hollow in the ground."

The May Fly

Samuel A. Harper

The world of time means naught to you,
A child of timeless space.
Your wisdom brings the flush of shame
To my earth-troubled face.

For you were born of fiery sun,
Among the kindred stars,
In whose warm light content to live
Above earth's bridling bars.

For you enough to find the light
That circles round the spheres,
While I go stumbling down the dark,
Encumbered with the years.

For you it is enough to shine
As brightly as you may
In Nature's endless pageantry
That floods the cosmic day.

So thanks to you my little friend.
Your brief span teaches me
That life among the kindred stars
Is our eternity.

Museum Activities

Annual Meeting

The 89th Annual Meeting of the Academy was held Monday evening, April 15, 1946 in the Auditorium. There was no guest speaker and the meeting was devoted entirely to business matters. The reports of the Director, the Treasurer, and various committees were followed by the election of new members. A number of eminent scientists were elected Fellows and Honorary Life Members. One Life Member and sixteen Associate Members were also elected.

The following officers were elected: President, Dr. Nathan Smith Davis; First Vice-President, Dr. James P. Simonds; Second Vice-President, Kenneth A. Reid; Secretary, Nat T. Burfeind; Trustee for five years, Henry B. Babson; Scientific Governors for three years, Dr. Alfred Emerson and Dr. C. L. Turner.

New Members

New members elected at the 89th Annual Meeting, April 15, 1946:

Fellows: Henry Crew, Professor Emeritus, Northwestern University.

Honorary Life Members; C. C. Adams, Albany, N. Y.; Nathan Banks, Museum of Comparative Zoölogy, Harvard University; Frieda Cobb Blanchard, University of Michigan; C. M. Breder, American Museum of Natural History; C. T. Brues, Harvard University; J. W. Buchanan, Northwestern University; Bowman C. Crowell, Chicago, Illinois; Charles Elton, Oxford University; Carl G. Hartman, University of Illinois; Ezra Kraus, University of Chicago; Oliver J. Lee, Northwestern University; Z. P. Metcalf, North Carolina State College; Alfred Redfield, Woods Hole Oceanographic Institute; Henrique da Rocha-Lima, Instituto Biologico, Sao Paulo, Brazil; Hanford Tiffany, Northwestern University; G. L. Walls, Rochester, N. Y.; Sewall Wright, University of Chicago.

Life: L. F. Urbain, Chicago, Illinois; W. F. Ross, Middlesboro, Kentucky.

Associate; John Birrell, Miss Lena L. Birkeness, Miss Helen Donaldson, Harry Eichelberger, Eugene Ericson, William H. Esselmont, Horace Fea, Henry F. Fischer, Mrs. Angeline W. Gerten, Fred G. Heuchling, Joseph Koczur, William C. Lange, Miss Thelma Ray, R. C. Schobert, W. A. Suter, Daniel J. Zimring—all of Chicago.

Visitors

Recent visitors to the Academy included A. M. Jackley, Department of Agriculture, Pierre, South Dakota; Cecilia Peikert, Curator of the Museum of Illinois State Normal College, Normal, Illinois; Jane Garrison, formerly the Director of the Brooklyn Children's Museum; and Dr. Charles C. Adams, of Albany, New York. Dr. Adams was located in Chicago many years ago and at that time was quite active in Academy affairs. He has recently retired from his position as Director of the New York State Museum.

Academy Receives Bequest

From the estate of the late Isabelle Hollister Martin the Academy has received a bequest of one thousand dollars. Further apportionments under the terms of the will may increase this amount at a later date.

Personnel

Dr. Eliot C. Williams, Jr., Assistant to the Director, returned to the Academy on March 1. He has charge of public relations and educational work and is Acting Curator of Invertebrate Zoölogy.

Evelyn Wade has joined the staff of the Academy as secretary to the director, and Elaine B. Shattuck as an assistant in the Library.

New Publications

A new series of miscellaneous papers has been initiated by the Academy as an outlet for original articles, more or less technical in nature, one to four pages in length, in any field of natural history. The title of the series is *Natural History Miscellanea*. Individual issues, published at irregular intervals, will be numbered separately and will represent only one field of specialization; e. g., botany, geology, entomology, herpetology, etc. The series will be distributed to libraries and scientific organizations with which the Academy maintains exchanges, and a title page and index will be supplied to these institutions when a sufficient number of pages to form a volume have been printed. Individual specialists with whom the museum or the various authors maintain exchanges will receive only those numbers dealing with their particular fields of interest. A reserve will be set aside for future exchanges and a supply of each number will be available for sale at a nominal price.

The first two numbers of this new series are as follows: "A Case of Hermaphroditism in the Cutthroat Trout" by C. L. Turner, *Natural History Miscellanea* number 1, pages 1-2, published April 20, 1946, price $0.05; and "The Rattlesnake in Maine" by Ralph S. Palmer, *Natural History Miscellanea*, number 2, pages 1-3, published April 24, 1946, price $0.05.

Special Publication Number Seven, "A Catalogue of the Egan Collection of Silurian Invertebrate Fossils at The Chicago Academy of Sciences" by John R. Ball and Katherine F. Greacen, pages 1-55, plate 1, was published February 18, 1946, price $0.50.

Three numbers of the *Bulletin* have also been published recently: "A New Pselaphid Beetle from Brazil Associated with Termites" by Orlando Park, *Bulletin*, volume 7, number 8, pages 445-451, plate 1, published January 31, 1946, price $0.10; "Checklist of Pselaphidae (Coleoptera) Known from Guatemala," by Orlando Park, *Bulletin*, volume 7, number 9, pages 457-468, published April 20, 1946, price $0.25; and "Intergradation Among Ring-necked Snakes from Southern New Jersey and the Del-Mar-Va Peninsula" by Roger Conant, *Bulletin*, volume 7, number 10, pages 473-482, published May 15, 1946, price $0.25.

Exhibits

During the past few months, Thurston I. Wright, the museum preparator, has been preparing plaster molds and celluloid casts of reptiles and amphibians of the Chicago Region. These specimens will be used in an exhibit of all the reptiles and amphibians of this region. Local field trips have been made to procure the necessary animals and others have been collected by members of the Amateur Herpetologists Club of Chicago.

Children's Programs

The annual series of Saturday Morning Programs for Young People started on April 20 and continued through May 25.

April 20. A Trip to Alaska.
April 27. A Trip to Africa.
May 4. A Trip to Hawaii.
May 11. Life Stories of Common Animals.
May 18. The Story of the Jungle.
May 25. Volcanoes in Action.

Bird-banding Conference

The Sixth Annual Bird-banding Conference was held on Saturday, March 23, 1946 at the Academy. The annual Bird-banding Conferences are sponsored jointly by the Academy and the Wm. I. Lyon Bird-banding Council.

The afternoon session consisted of short papers by bird-banders and other ornithologists and included a color motion picture "Birds, Beasts and the Rainbow," by Dr. E. R. Kalmbach, U. S. Fish and Wildlife Service. The evening session was devoted to a lecture, illustrated with color motion pictures, "Wildlife of the Lower Souris and Niobrara Refuges," by Dr. Wesley F. Kubichek of the U. S. Fish and Wildlife Service. The program was arranged by a committee of which Louis G. Flentge was the chairman.

The Naturalist's Book Shelf

Public Medical Care

By Franz Goldmann, M.D.

Columbia University Press, New York 27, New York, 1945, vii, 226 pages, bibl., index. $2.75.

"If we could first know where we are and whither we are trending, we could better judge what to do and how to do it."

—Abraham Lincoln

As Doctor Goldmann opens his book with this quotation from one who believed in government of the people, for the people and *by the people,* one might surmise that the author believed that the United States of America should continue to be a republican federation of democratic states with government subservient to a people secure in self-reliance. The following statement of the philosophy underlying planning for medical care taken from the book's last chapter, shows that this is not the case:

"Planning for adequate medical care is more than a method of organizing the application of scientific knowledge and technical skill. It is the expression of a social philosophy. It is effective only in so far as it is sustained by a conviction of principle.

"The philosophy underlying modern health policy rests on two cornerstones: society's need of the fit and productive individual and the individual's right to health. This concept recognizes the reciprocity of health and economy; the interdependence of the individual and the state as well as their mutual obligations; and *the need for social action substituting solidarity for isolated individual effort."*

This book is just another bit of propaganda by an associate professor of public health who has never engaged in family practice; who has no confidence in the ability of the people to solve their own problems; and who believes that health problems can only be solved by an omnipotent, totalitarian, collectivistic state — by government of the people, for the people, *by the government.*

If this is "where we are and whither we are trending," it is indeed time to "judge what to do and how to do it" lest we be enslaved through the enactment of the revolutionary and destructive measures advocated by anti-American ismists who wish to delude the people into believing that they are "liberal social planners."

N. S. Davis, M.D.

Black Widow, America's most Poisonous Spider

By Raymond W. Thorp and Weldon D. Woodson

University of North Carolina Press, Chapel Hill, 1945, xi, 222 pages, 24 illustrations, bibliography, index. Cloth, $3.00.

This is the first book-length treatment of the black widow spiders known to the reviewer. It is both readable and timely, and should find receptive homes in many private and public libraries.

The foreword by Dr. Emil Bogen, who has written with authority upon the medical aspects of spider poisoning, closes with an apt three-sentence review of this book:

"This is not the last word that will be said on the subject of the black widow spider. Such a widespread and ferocious form cannot but continue to add interesting chapters to its guerilla-warfare history. It is, however, an extensive review of all that has gone before, and may well serve as a point of departure for future studies."

The eighteen chapters cover almost all phases of the biology and control of the black widow spider, *Latrodectus mactens* (Fabricius), in a popular manner.

The first two chapters discuss the rather large and varied store of legend that has accumulated about spiders in general. The third chapter rounds out this introductory material by a brief treatment of those spiders, other than the black widow group, that have been reported as causing suffering and fear to man.

The rest of the book deals with *Latrodectus,* and with the North American *mactans* in particular. These fifteen chapters should give the interested reader the necessary budget of facts to evaluate properly these interesting spiders. The subject matter is divisible into three broad categories.

First, the applied approach, that is, the economic and public health relations to man. This is chiefly medical, and forms the bulk of the volume. Chapters 5 to 12, inclusive, cover case histories of *mactans* bites, clinical notes, medical reports, experiments dealing with *mactans* biting man and other animals, and the diagnosis and treatment of black widow bites. Chapters 16 and 17 deal with the control of these spiders by both natural and artificial agencies.

The second aspect is concerned with the classification of black widow spiders. This is too briefly dealt with, partially in Chapter 4, and especially in Chapter 13. In this latter chapter, the black widow is discussed in relation to its phylum, the Arthropoda, its class, the Arachnida, and its order, the Araneida, or spiders proper. Here are also included relevant facts about its anatomy, secondary sexual characters, and similar data.

The third aspect has to do with the ecology of black widow spider populations. Their relations to the environment are noted in several parts of the book; Chapter 14 discussed the life history of these animals; their food is dealt with in Chapter 15; the nest, web, and sheltering in Chapter 16, and their zoögeographic distribution in Chapter 4.

There is much to commend, and little to criticise in this book. With regard to criticism, the reviewer has two points, both of which may be unnecessary if the book is viewed purely as a popular account. First, Chapter 4, on the distribution of the genus *Latrodectus,* should have contained a global map, showing all of the ranges of all of the species, as carefully mapped as the facts warrant, and a concise table of the relatively few species of the genus listed. Second, either in Chapter 4, or in Chapter 13, there should have been a technical key to the species, and varieties, of *Latrodectus,* preferably with page references to simple line illustrations of the diagnostic characters involved.

The text is supplemented by a number of beautifully clear photographs of "tarantula" spiders, wolf spiders, and various views of both male and female black widows. These lower reader resistance.

Three appendices are included, one on unpublished medical reports, another on a questionnaire conducted by the authors regarding black widow bites, and a third consisting of two tables setting forth (1) number of references made to spider bites by years, from 1 A.D. to August, 1943, and (2) of reported spider bites by states, from 1726 to 1943.

The bibliography is good, with references fully cited; I found very few omissions, and all of the larger, technical references seem to be set forth, including the rather recent paper by Chamberlin and Ivie (1935) on the taxonomy of the genus in the United States, the medical papers by Bogen, Blair, *et cetera.* The authors deserve thanks for bringing together both the technical and popular references, as well as those to spider legend. This bibliography is in three parts.

The book closes with a reliable, cross-referenced index to the numerous topics covered.

Orlando Park.

American Garden Flowers

By Gladys Lynwall Pratt

Random House, New York, 1943, 50 pages, 20 pages and lining papers of cover with colored plates, index. $1.00.

This book is both instructive and delightful. Of the 69 flowers richly

illustrated in color, nine are shrubs and eight are vines. Six preliminary pages are devoted to material basic to an understanding of garden flowers, and marginal drawings of plant parts fit into the text as a running visual aid.

Each flower illustrated is accompanied by engaging information on appearance, varieties and cultural needs. Both the experienced and the inexperienced gardener will enjoy the addition of interesting historical and literary memoranda. To see the book is to wish for it, either for one's self or for a friend.

Anna Pedersen Kummer.

Noah's Shoes

By Max Fleischer

S. J. Bloch, Detroit, 1944, 160 pages. $2.25.

Did you ever wonder what you'd do if the destiny of the world depended on you? Suppose, for instance, you knew the world was to be destroyed by floods seven days hence, and you had the responsibility of gathering together representatives of all the species of mammals, birds and insects on earth . . . together with food to sustain them for a considerable period of time . . . and building an ark to hold them all, before the flood began? In this fanciful little book, author Fleischer — whose imagination has won him considerable renown as a movie-maker, cartoonist, editor and inventor — imagines himself in just such a position: that is, "in Noah's shoes." The story of his problems and how he attempted to solve them makes entertaining reading, and incidentally presents hundreds of fascinating facts about the creatures that inhabit our earth.

Our modern Noah's first act is to set his seven assistants (wife, sons, and daughters-in-law, just as in the Biblical version) to work at building an Ark. This leaves "Noah" free to collect the birds and beasts and provide for proper food. That, he feels, is a job for a mastermind and not to be trusted to untutored underlings.

Noah begins his task by compiling statistics on the kinds, numbers and species of living creatures which he must crowd into his small vessel. From his twentieth-century vantage point (which, by the way, he did not accord his assistants in their methods of ship-building) he avails himself of facts which would have staggered the Biblical Noah. As, indeed, they stagger Noah Fleischer. He reckons on some 196,000 mammals; 567,000 birds; and 800,000 insects — counting two to seven pairs of known species alone. Though he has but a vague idea of what food each will require for a year, he estimates five billion pounds. Then when he figures approximately how many offspring will be born during the year on the Ark, and the amount of food they will require, he comes near to giving up altogether — for the total bulk will not go into less than one million five hundred thousand ships the size of the Ark. Moreover, he figures that if none of the new-born insects die, in less than six months the Ark and all its other creatures would be in the center of a tightly packed ball of insects a quarter of a mile thick.

The more he learns of the amazing characteristics, habits and requirements of all these creatures soon to be in his charge, the more dazed and pessimistic he becomes. And so the seven days allotted for preparation slip by one by one, with poor Noah still not having the slightest idea how to accomplish what he knows is an impossible task.

But somehow, while he sweats away over his figures and facts, his calm, casual, slightly hardboiled assistants miraculously complete the ark and stock it with food themselves. On the appointed day Noah stands beneath the darkening skies and watches incredulously as thousands, millions of creatures converge upon the Ark from every direction and are shoved inside by his assistants. And somehow, they all get in!

When at last the assistants have bolted shut the heavy door, Noah resigns himself to caring for a box of earthworms during the year on the Ark as his contribution toward saving the world. These insignificant creatures, he says, are the key to the existence of everything on earth; for without earthworms to work the soil, the earth would

soon become cold, hardbound and sterile — unable to support life of any kind.

So, in the utter darkness of the Ark, he spends the year in a somewhat comatose condition, guarding his earthworms. Every so often a breeze whipping past him indicates that one of his assistants is making his rounds feeding the animals, and occasionally one of them pops some food into his mouth (once, by mistake, a handful of scrambled centipedes).

At length the waters recede and just as the food supply is about exhausted, the assistants fling open the door and release all the animals to go forth and repopulate the barren muddy world. Last out is the box of earthworms — most unceremoniously tossed out the door by Noah's assistants.

Mr. Fleischer credits no source for the odd facts he weaves into his story, and careful checking would probably unearth some errors. However, the book is enjoyable and written in a vein of subtle humor, and those interested in acquiring nature lore of the "Believe It Or Not" variety will glean many a strange fact with which to astound their friends.

Jean M. Williams.

Test Your Nature Lore

Answers to questions on page 16.

1. False. Annual migrations are found in a number of other groups of animals. including butterflies, fishes, and mammals.
2. True. Reaching a length of over 95 feet and a weight of 294,000 pounds, the sulphur-bottom whale is believed to be the largest of animals, living or extinct.
3. True. The proper name of this insect is periodical cicada. The term locust is properly applied to grasshoppers of the family Acrididae.
4. False. The queen honeybee has a sting which may be used many times, in contrast with the worker bees which may only sting once.
5. True.

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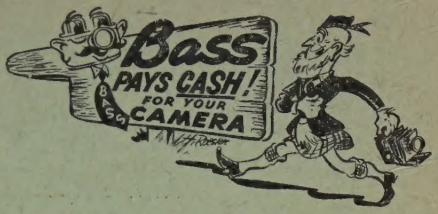

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Although the Academy is at present filling a definite place in the educational life of the Chicago Region, its resources are inadequate for the services it is potentially able to render. Those interested in advancing education in natural history are invited to help by supporting such activities through membership in the Academy.

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